



«ETTORE MAJORANA» FOUNDATION AND CENTRE FOR SCIENTIFIC CULTURE  
TO PAY A PERMANENT TRIBUTE TO GALILEO GALILEI, FOUNDER OF MODERN SCIENCE  
AND TO ENRICO FERMI, THE «ITALIAN NAVIGATOR», FATHER OF THE WEAK FORCES



# INTERNATIONAL SCHOOL OF MATHEMATICS «GUIDO STAMPACCHIA»

## 65th Workshop: MATHEMATICAL AND COMPUTATIONAL EPIDEMIOLOGY OF INFECTIOUS DISEASES - THE INTERPLAY BETWEEN MODELS AND PUBLIC HEALTH POLICIES

ERICE-SICILY: 30 AUGUST – 5 SEPTEMBER 2015

Sponsored by the: • Italian Ministry of Education, University, and Research • Sicilian Regional Government

### PROGRAMME AND LECTURERS

#### *Optimal control in Mathematical Epidemiology*

• B. BUONOMO, Naples University, IT

#### *Optimal control in Mathematical Epidemiology*

• V. CAPASSO, Milan University, IT

#### *Lessons learned from the epidemic of Ebola virus disease in West Africa*

• G. CHOWELL-PUENTE, Georgia State University, Atlanta, GE, US

#### *Facing the complexity of infectious disease spread*

• V. COLIZZA, INSERM, Paris, FR

#### *Modeling pertussis*

• O. DIEKMANN, Utrecht University, NL

#### *Behavioral epidemiology: beyond statistical mechanics*

• A. d'ONOFRIO, International Prevention Research Institute, FR

#### *Closing Talk*

• J. EDMUNDS, London School of Hygiene and Tropical Medicine, UK

#### *Modeling the Ebola epidemic in West Africa*

• S. FUNK, London School of Hygiene and Tropical Medicine, UK

#### *Opening talk*

• D. GRECO, EU Project ASSET, BE

#### *When is a structured epidemic model representable by a system of ODEs?*

• M. GYLLENBERG, University of Helsinki, FIN

#### *Modeling infectious disease parameters based on serological social contact data*

• N. HENS, Hasselt University, BE

#### *Interactions between epidemics and demography*

• M. IANNELLI, Trento University, IT

#### *Modeling the impact of treatment on transmission dynamics of HIV and Hepatitis C*

• M. KRETZSCHMAR, University Medical Centre Utrecht, NL

#### *Avian Influenza: modeling and implications for control*

• M. MARTCHEVA, University of Florida, USA, Gainesville, FL, US

#### *Topics in behaviour epidemiology in infectious diseases*

• P. MANFREDI, Pisa University, IT

#### *TBA*

• A. MELEGARO, Economic University «Luigi Bocconi», Milan, IT

#### *Modeling Ebola virus disease epidemics in West Africa*

• S. MERLER, Bruno Kessler Foundation, Trento, IT

#### *TBA*

• F.A. MILNER, Arizona State University, Tempe, AR, US

#### *Epidemic models with multiple strains and partial cross-immunity*

• A. PUGLIESE, Trento University, IT

#### *Epidemiology and modeling of measles*

• C. RIZZO, National Institute of Health, Rome, IT

#### *Inferring pertussis epidemiology*

• P. ROHANI, University of Michigan, Ann Arbor, MI, US

#### *How to analyze epidemic data in the emerging phase*

• G. SCALIA-TOMBA, University Rome «Tor Vergata», Rome, IT

#### *Chaos and noise in population-based models of infectious diseases*

• N. STOLLENWERK, Lisbon University, PT

#### *Topics in Eco-epidemiology*

• É. VENTURINO, Turin University, IT

#### *Computational modeling of the international spread of infectious disease*

• A. VESPIGNANI, Northeastern University, Boston, MA, US

### PURPOSE OF THE WORKSHOP

The mathematical and computational modelling of the spread of infectious diseases is a research field that was both able to give an impetus to dynamical systems theory, and to give an important contribution to the epidemiology of infectious diseases. National and International health authorities routinely employ mathematical and computational epidemiology (MCE) in public Health decisions and policies. This influence in biomedicine is unparalleled in any other fields of mathematical biology. Modern MCE is facing huge challenges, here we mention two: understanding the role of human mobility to predict pandemics and define mitigation measures; understanding the role of human behaviour in the spread of infectious diseases. However, many more challenges are being currently explored, and other will emerge in next future.

The aim of this international conference is twofold. The first aim is to illustrate the major areas of research in MCE and the huge variety of tools and approaches that are currently employed. The second aim is to foster frank peer-to-peer discussions between expert outstanding researchers and more junior investigators as well as PhD students.

### APPLICATIONS

Persons wishing to attend the workshop and to deliver a short communication should apply by using website:

website: <https://erice2015.wordpress.com/>

or apply in writing to:

- Dr. Alberto D'ONOFRIO  
International Prevention Research Institute  
96 Cours Lafayette - 69006 Lyon, France  
e-mail: [alberto.donofrio@i-pri.org](mailto:alberto.donofrio@i-pri.org) – e-mail: [erice2015@i-pri.org](mailto:erice2015@i-pri.org)

### POETIC TOUCH

According to legend, Erice, son of Venus and Neptune, founded a small town on top of a mountain (750 metres above sea level) more than three thousand years ago. The founder of modern history — i.e. the recording of events in a methodic and chronological sequence as they really happened without reference to mythical causes — the great Thucydides (~500 B.C.), writing about events connected with the conquest of Troy (1183 B.C.) said: «After the fall of Troy some Trojans on their escape from the Achaei arrived in Sicily by boat and as they settled near the border with the Sicilians all together they were named Elymi: their towns were Segesta and Erice.» This inspired Virgil to describe the arrival of the Trojan royal family in Erice and the burial of Anchises, by his son Aeneas, on the coast below Erice. Homer (~1000 B.C.), Theocritus (~300 B.C.), Polybius (~200 B.C.), Virgil (~50 B.C.), Horace (~20 B.C.), and others have celebrated this magnificent spot in Sicily in their poems. During seven centuries (XIII-XIX) the town of Erice was under the leadership of a local oligarchy, whose wisdom assured a long period of cultural development and economic prosperity which in turn gave rise to the many churches, monasteries and private palaces which you see today.

In Erice you can admire the Castle of Venus, the Cyclopean Walls (~800 B.C.) and the Gothic Cathedral (~1300 A.D.). Erice is at present a mixture of ancient and medieval architecture. Other masterpieces of ancient civilization are to be found in the neighbourhood: at Motya (Phoenician), Segesta (Elymian), and Selinunte (Greek). On the Aegadian Islands — theatre of the decisive naval battle of the first Punic War (264-241 B.C.) — suggestive neolithic and paleolithic vestiges are still visible: the grottoes of Favignana, the carvings and murals of Levanzo.

Splendid beaches are to be found at San Vito Lo Capo, Scopello, and Cornino, and a wild and rocky coast around Monte Cofano: all at less than one hour's drive from Erice.

More information about the «Ettore Majorana» Foundation and Centre for Scientific Culture can be found on the WWW at the following address:  
<http://www.csem.infn.it>

PLEASE NOTE: Participants must arrive on 30 August, not later than 6 p.m.